

REMARKS

This paper responds to the Office Action mailed on October 4, 2006.

Claims 17 and 39 are amended, no claims are canceled, and no claims are added; as a result, claims 17, 31-33 and 35-41 are now pending in this application.

Applicant further notes that a member of the same patent application family as the present application, specifically, serial no. 11/459,426, has published as 20060257561A1.

§112 Rejection of the Claims

Claims 39-41 were rejected under 35 U.S.C. § 112, first paragraph, as lacking adequate description or enablement. Specifically, the Examiner maintains that the recitation of “stopping the single spraying movement at the second point” in claim 39 implies that the second point may include any point on the wafer. Applicant respectfully disagrees with this interpretation, but nevertheless has amended claim 39 to provide additional clarity. Accordingly, removal of the rejections under 35 U.S.C. §112, first paragraph, is respectfully requested.

Claims 39-41 were also rejected under 35 U.S.C. § 112, second paragraph, for indefiniteness. Again, Applicant disagrees with the Examiner’s position in this regard, but has amended claim 39 in the interest of providing additional clarity in the claim. Removal of the rejections under 35 U.S.C. §112, second paragraph, is therefore respectfully requested.

§103 Rejection of the Claims

Claims 17, 31-33 and 35-41 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,395,803 to Adams (hereinafter, “the Adams reference”) or alternatively, over U.S. Patent No. 5,094,884 to Hillman *et al.* (hereinafter, “the Hillman reference”), taken in view of U.S. patent No. 4,267,212 to Sakawaki (hereinafter, “the Sakawaki reference”). Applicants disagree with the stated grounds of rejection and desire to further clarify various distinctions of the present invention over the cited art. Reconsideration of the present application is therefore requested in light of the present amendment and following remarks.

Although the disclosed embodiments of the invention may be discussed in comparison to the prior art, it is understood that any discussion of the disclosed embodiments, as well as any discussion of the differences between the disclosed embodiments of the present invention and the

prior art do not define the scope or interpretation of any of the claims. Instead, such discussed differences, if presented, are offered merely to help the Examiner appreciate important claim distinctions as they are discussed.

The Examiner has cited the Adams reference as pertinent to the patentability of claims in the present application. Adams discloses an apparatus and method for applying a photoresist material to a semiconductor wafer. Referring briefly to Figure 2 in the Adams reference, the disclosed apparatus includes a wafer 11 fixedly mounted on a rotating chuck 19. A dispensing arm 31 is pivotally mounted so that a dispensing tube 35 may be positioned over the wafer 11. Applicant notes that the Adams reference fails to disclose that the dispensing tube 35 is configured with a nozzle to accelerate and atomize the photoresist material upon discharge from the dispensing tube 35. In contrast, and as disclosed in the present application, a nozzle is provided that is operable to “...dispense solution *in the form of a fine mist in a dispersed and divergent pattern*. Examples of appropriate nozzles include atomizing nozzles, airless spray nozzles, and the like...”. (Paragraph 25; Emphasis added).

The Examiner also cites the Hillman reference. With reference to Figure 1 in the Hillman reference, a workpiece 104 is mounted on a rotating chuck 102. A dispensing arm 112 having a nozzle 114 may be rotatably positioned over the workpiece 104 so that a fluid material may be deposited onto the workpiece 104. Applicant notes that the Hillman reference also fails to disclose that the nozzle is configured to generate a fine mist. In fact, Applicant submits that Hillman specifically teaches dispensing a continuous fluid stream onto the workpiece 104. For example, at column 5, lines 51-65, Hillman describes that at the point of contact with the surface, the fluid stream has a generally rectangular or oblong cross section, which generally conforms to the rectangular configuration of the nozzle 114. Applicant respectfully submits that a fine mist in a dispersed and divergent pattern cannot conform to the rectangular configuration of the nozzle 114. Applicant further notes that Hillman states, at column 5, lines 51-65, that “Surface tension of the fluid material will ultimately effect [sic] the cross-sectional shape of the material *subsequent to its discharge* through the rectangular or oblong shaped opening 124 [of nozzle 114].”. (Emphasis added). Applicant submits that if, *arguendo*, the fluid material in Hillman were in an atomized state subsequent to discharge, surface tension effects would be unable to affect a cross sectional shape of the material. Accordingly, Applicant concludes that Hillman

teaches away from a nozzle structured to deliver a fluid material to the workpiece surface in an atomized form.

The Examiner has also cited the Sakawaki reference for specifically disclosing a fluid distribution path that proceeds along a diameter of the wafer. Applicant notes, however, that the Sakawaki reference fails to disclose the teaching missing from the Adams and Hillman references, as discussed in detail above.

Turning now to the claims, differences between the applied art and the claim language will be specifically pointed out. Claim 17, as amended, recites in pertinent part: “A method of depositing a material along a diameter of a surface having an edge, a center, and an opposite edge, wherein said method comprises...rotating said surface...[and]...providing a nozzle *configured to generate a dispersed mist from the material...*”. (Emphasis added). The Adams reference does not disclose this. Although Adams discloses a discharge tube, there is no disclosure or suggestion that a nozzle suitable for atomization is positioned on the discharge tube. The Hillman reference discloses that a nozzle is positioned on a dispensing arm, but fails to disclose or suggest that the disclosed nozzle is operable to generate a finely divided mist. In fact, Applicant maintains that Hillman teaches away from an atomizing nozzle by describing the role of surface tension forces in determining a shape of the fluid stream. Moreover, the Sakawaki fails to provide the necessary teaching missing from the Adams and Hillman references. Accordingly, claim 17 is allowable over the cited art. Claims depending from claim 17 are also allowable based upon the allowable form of the base claim and further in view of the additional limitations recited in the dependent claims.

Claim 39, as amended, recites in pertinent part, “A method of depositing a wafer-coating, liquid material along a diameter of a wafer surface having a circumferential edge and a center, comprising...providing a nozzle *configured to generate a dispersed mist from the material...*”. (Emphasis added). Again, neither the Adams reference or the Hillman reference disclose or suggest this. Furthermore, Sakawaki fails to provide the necessary teaching missing from the foregoing references. Claim 39 is also therefore allowable over the cited art. Claims depending from claim 39 are also allowable based upon the allowable form of the base claim and further in view of the additional limitations recited in the dependent claims.

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney at (612) 349-9587 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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4 Jan '06

By


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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Mail Stop Amendment, Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 4 day of January 2007.

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